

## FARM WOODLOTS IN ILLINOIS

W. F. SCHREEDER, NATURAL HISTORY SURVEY, URBANA

The acreage of farm woodlots in Illinois as given by the 1920 Census amounts to 3,102,579 acres, and the value of woodlot products was \$6,259,000. Taking into consideration the value of this asset it seems that a brief discussion of the farm woodlot in Illinois would not be out of place at this meeting.

Some studies had been made as to the value of farm woodlot products as they contribute to the farmer's living (Funk '14) and the use of wood for fuel (Bulletin No. 753, U. S. Department of Agriculture, Office of Forest Investigations), but not until recently have studies been made as to the economic value and possibilities of the farm woodlot. Perhaps the most recent information on this subject is contained in an unpublished manuscript in the files of the Forest Service, by Mr. E. F. Hodgson, on "Farm Woodland Economics".

The results which are presented in preliminary form in this paper have been derived from a study made of farm woodlots in Illinois, partly by personal visitation to farmers in certain townships and partly through the questionnaire method. It is a part of the whole subject of forest economics of the state, for the study of which Professor H. H. Chapman, professor of Forest Management in the Yale School of Forestry, was employed part time last summer by the Natural History Survey and upon which he will later present a detailed report.

During the year 1922 questionnaires were sent out to 1,600 farmers in every county in the state. Lists of farmers from various counties were sent in by the county farm advisers and contained the names of those most likely to have farm woodlots or to be interested in the same, although many were "corn-belt farmers". Questions were asked not only concerning the acreage of the farm in woods and the amount of timberland grazed, but also regarding the amount of wood and coal burned, the number of fence posts used and the amounts of various products cut from farm woodlands for the last five year period with the prices received for the same, as well as

local prices for lumber, fence posts and shingles. One question dealt with the durability of various species for fence posts and another with the attitude of the farmer towards annually burning over the woods. About 440 of these questionnaires, completely or partially filled out on these various points, were returned to the Natural History Survey and the figures resulting from averaging the data may be of interest.

## GENERAL FACTS

The average farm contained 354 acres. Fifty acres, or about 14 per cent of the average farm, was woodland. Compilation of results on clearing for farming and pasturage showed that within the next few years this 50 acres is to be reduced to 34 acres, or there will be a reduction of 31 per cent of our present timber stand for the farms represented. The 16 acres which is slated for clearing will be about equally used for farm and pasture land. Inquiry as to the amount of land which might be planted or reforested showed that an average of five acres should be planted, being considered more valuable for forestry than for farming. The average amount of forest plantation for each farm was only one acre.

The value of the woodlot to the farmer as revealed by the answers is considerable. From his woodland he secures on the average 223 posts, or nine more wooden posts than he needs to keep his fences in repair.

Besides furnishing him with fence posts, this same woodlot yields 15.5 cords of wood annually to its owner, and during the last five year period has supplied him annually with 2,863 board feet of lumber, about two-thirds of his total needs in this line. While as a rule the farmer takes less care of his woodlot than of his other crops, in addition to the pasture it yields him, his average annual return from it, according to our figures, is as follows:

Amount or number of pieces	Price per piece cord or M. feet	Total yield per farm per annum
223 fence posts .....	.22 cents each .....	\$ 49.06
15.5 cords of wood .....	\$1.95 per cord .....	30.22
2863 board feet of lumber .....	\$31.30 per M. feet .....	89.61
Total .....		\$168.89

## INDIVIDUAL EXAMPLES OF PROFIT

Some examples of individual profit from farm woodlots stand out conspicuously. The answer on one in particular, where the farmer said "that there was not enough timber around here to bother with" shows that he obtained from 17 acres 60 to 70 cords of wood for himself and tenant, valued at \$247.50, 125 fence posts and 600 feet of farm lumber.

Besides, on eleven acres of the same woods he had pastured three head of cattle, four horses, and 250 hogs from May to November. When we consider that a fair price for pasturing stock is about \$2.00 per head per month we must conclude that this 17 acres of woodland yielded a return fully equal to some of the owner's farm land.

## DURABILITY OF FENCE POSTS

The figures given on durability of native timber for fence posts, while, of course, a matter of opinion by the farmers who have answered, agree very well with figures on the durability of untreated fence posts given by the Forest Products Laboratory at Madison, Wisconsin, by the Ohio Agricultural Experiment Station, and by the Iowa State College. Soft maple stood lowest in the list with a durability of 2.4 years; white oak, which is taken usually as a standard in service tests, was rated at 9 years, catalpa was rated at 15 years, cedar at 13, black locust and mulberry at 17 years each, while osage orange or "hedge" had an average rating of 36 years. We have seen specimens of osage orange posts which had been in the ground 35 years, so that we can rely on the latter figure as being not far from correct. Black locust and red mulberry are next to osage in order of durability.

## WOODLOT MANAGEMENT

The three principal factors influencing successful woodlot management in Illinois are *grazing*, *fire* and *taxes*, and these will be considered in order.

(a.) *Grazing*. This is a state-wide practice. Results from the questionnaires show that 84.5 per cent of all the woodland owned by 212 farmers who replied to that particular question is subject to grazing.



Definite figures have not been obtained as to the amount of woodland pasture required to support a single head of stock, but most farmers agree that grass under the shade of trees has much less nourishment in it for stock than that grown in full sunlight. Farmers in southern Illinois place its value for forage at about one-fifth of that of good bottomland pasture. Hodgson estimates the value of woodland pasture at 24 acres required for 10 head of stock or 2.4 acres required per head.

#### DAMAGE DUE TO GRAZING

It is very easy to see the damage done by grazing, first to the trees and reproduction, and second to the soil. The bark of the mature trees is damaged by rubbing, the tender shoots forming the young growth are eaten off, and seedlings are trampled out and killed.

Forest soil which is normally moist and porous and ideal for the growth and reproduction of trees is packed hard, and growth is either retarded or completely stopped. The soil, where packed by the hoofs of grazing animals, becomes dry and dusty and the rain instead of soaking into the ground runs off rapidly, leading finally along paths to the formation of gullies.

In LaSalle county Dr. George D. Fuller states that not over 5 per cent of the grazed woodlands show any reproduction; that in the last 25 years there has been but little change in the timber; and that grazing has produced woodlots which had better be called "wooded pastures", so scattering are the trees.

The need of shade for cattle is advanced as an excuse for grazing the woodlands, and this is perhaps quite as important as the forage which the cattle obtain. Shade for stock can be provided by fencing off a portion of the woods sufficient to supply shade, thus shutting out the stock from the more valuable woodland. The numerous photographs which have been taken by the Forest Survey party show very forcibly the effects of grazing, leading us to say that good timber and good grazing are impossible on the same tract.

(b.) *Fire.* Fire, the second problem of the landowner, varies greatly with the region. The woodland tracts of

northern Illinois are sufficiently isolated to confine fires to relatively small areas. The tracts in southern Illinois, however, are more continuous and public sentiment against burning is not so well developed. Results compiled from the questionnaires show that out of 217 farmers 80 per cent were against and 20 per cent in favor of annual burning. Out of 296 answers, causes for fires were assigned to the following:

Campers and hunters .....	103
Carelessness .....	54
Burning to kill insects.....	37
Brush and grass burning.....	32
Railroads .....	26
Smoking .....	25
Lightning .....	6
Incendiary .....r.....	3

---

Total answering .....296

It can be seen from this list of causes that about 89 per cent of the fires are due to man and are preventable. One fourth of this 89 per cent are set by farmers themselves under the pretext of killing insects or benefiting grazing. Burning over the entire woodland to kill chinch bugs is inexcusable (Flint '22) since investigations on the edges of woods have shown that at a distance of 50 feet about 90 per cent of the bugs are left behind, as they seek the sunny edges of the woods, being found mostly on the south and west sides. The burning of a narrow strip around the timber would not only kill the greater per cent of them but make a satisfactory fire guard to prevent the entrance of fires. As to benefiting grazing, the idea is prevalent that the ashes of the burned grass act as a fertilizer, but this is probably more than counterbalanced by damage to the roots of the grass. Wherever there is a rail or "worm fence" around the woods we usually find that fires are kept out, as farmers do not like to rebuild their fences, and this is true especially in southern Illinois.

(c.) *Taxes.* In spite of answers from farmers in certain sections showing that taxes were excessive on

timberland and tended to its conversion into use for farming or pasturage, there was considerable opposition from farmers themselves, if we can believe newspaper reports, to the proposed clause on that subject in the new constitution which read thus: "Areas devoted to forests and forest culture shall be classified for or exempted from taxation".

The main objection stated was that "owners of fine landed estates would escape taxes by listing their grounds as woodland, thus adding to the tax burden of the dirt farmer". The object of the clause was simply to allow some kind of classification of forest land, with exemption perhaps of young timber not yielding any revenue, and the interests of the "dirt farmer" could have been amply safeguarded in the tax law by prescribing that land to be classed as forest must have a certain number of trees per acre, thus avoiding any chance of the wealthy owner of an estate having his few ornamental trees listed as a forest.

Over against such hastily formed conclusions as the above opposing some sort of forest land classification, are such statements as these from farmer's questionnaires: "The average landowner cannot afford to maintain forest land, as taxes, and lack of income on the investment will put him in the County Home". "All of this sandy land is now taxed far beyond its worth. My tax last year on 300 acres was \$158.90. My largest income from this 300 acres was \$275, with 700 rods of fence to keep up". These statements certainly look as if some tax reform was needed, but of course they are only isolated examples.

As it is at present, matters are largely in the hands of the local assessor as to how much tax is paid upon a piece of timber. So far as we know, no consideration is taken of the age of the timber, its yield per acre, or the nearness to the time for cutting.

There is not time here to discuss the admitted failure of the general property tax. It may be said, however, to be defective when applied to immature timber "because by taxing the total value of the land and the trees upon it, it imposed an excessive burden upon the grow-



ing forest and it placed on the owner the inconvenient obligation to pay annual taxes for years before any income was realized" (Fairchild '22). The Committee on forest taxation of the National Tax Association suggests as a remedy the paying of a products tax of about 5 per cent on timber when it is cut, this applying to mature forests; and an exemption from taxation for immature and young timber, assessing these lands no higher than similar bare lands in the neighborhood. The main difficulties lie in the determination of what is "mature timber", and the irregularity of revenue resulting from the yield tax. It is along these lines, however, that the most satisfactory adjustment of our forestry taxation problem is to be looked for.

Fairchild, Fred R., 1922. Finding the Solution of the Forest Taxation Problem. Report of the Committee on forest taxation, National Tax Association, Minneapolis, Minnesota, American Lumberman, September 30, 1922. Pages 54-55.

Funk, W. C., 1914. What the Farm Contributes directly to the Farmer's living. Farmer's Bulletin 635. U. S. Dept. Agr. December 24, 1914.

Flint, W. P., 1922. Burn the Chinch-Bug. Circular 265, Univ. of Ill. Agr. Exp. Sta., Urbana, Illinois, October, 1922.